

ORIGINAL ARTICLE

Comparative study between Saudi and Egyptian COVID-19 patients and complications on the cardiovascular and respiratory systems

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ABSTRACT

By the end of June 2020, many countries (213) around the world reported about nine millions confirmed cases of the COVID-19 which originated from Wuhan, China, total death (about 472,000). America showed about two million and half confirmed cases with 122,455 deaths. Saudi Arabia showed about 161,000 confirmed cases and about 1,300 death, followed by Egypt about 55,000 confirmed cases and about 2,200 deaths. Respiratory failure due to ARDS is one of the major causes of mortality associated with COVID-19 disease. Acute myocardial injury and could occur in severe patients. In this research we were conducting a comparative study between COVID-19 patients after their recovery from infection in Egypt and Saudi Arabia. From May 2020 for two months we distributed questionnaire consist of 27 questions on Google drive about patient's demographic (8), cardiovascular (11) and respiratory (8) complications. Also, interviews with Egyptian patients who infected with COVID-19 were done after recovery. About 256 (Saudi) and 120 (Egyptian) patients were participated in this study. Our results showed that 45.7% (Saudis) and 70% (Egyptians) who infected with COVID-19 their age range from 31-50 years old. About 75.8% (Saudis) and 45% (Egyptians) are in contact with patients who are infected with COVID-19. About 31.3% (Saudi) and 5% (Egyptian) patients who are infected with COVID-19 had high heart enzymes. About half of patients with >95% oxygen level either in Saudi and Egyptian patients, while 16.8% (Saudi) and 10% (Egyptian) patients with <85% oxygen who are infected with COVID-19. We can conclude that cardiovascular and respiratory system complications are slightly different from patients in the two countries and also, the prevalence of infection.

KEYWORDS: COVID-19, Saudi Arabia, Egypt, Cardiovascular and Respiratory System Complications

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INTRODUCTION

COVID-19 is currently causing a world pandemic. Infection with COVID-19 is rapidly spread which started in China, as a pandemic by WHO on 11th March, 2020.[1] On 14th February 2020, Egypt announced its first COVID-19 case.[2] Thereafter, Egypt scaled up preventive measures, with a partial lockdown starting on 25th March 2020. RT-PCR was done in nasopharyngeal swabs from symptomatic patients and contacts of confirmed cases traced in the preceding 2 weeks. In patients with a high rate of suspicion, the test was repeated after 48 hours. [3] The Kingdom of Saudi Arabia (KSA) reported its first case on the 2nd of March 2020. [4] To estimate the expected disease burden in Egypt, we used fatality rates in the USA and Germany, because they applied open screening, and in regional countries with conditions similar to those

of Egypt (Algeria, Bahrain, Iran, Israel, Jordan, Saudi Arabia, Lebanon, Morocco, Palestine, Qatar, Tunisia, Turkey, and United Arab Emirates). KSA also used the fatality rate for estimation of Covid-19 disease burden. On the basis of WHO's report on 31st March, 2020 [3], the fatality rate of all reported countries ranged from 0.7% to 11.8%. KSA reported 1000 and 213,716 cases on 26th March and 7th July, 2020 respectively, while in Egypt 495 and 77,279 cases respectively. [5]. In Mainland [6] China, CT was often a first-line investigation for COVID-19 [7,8]. The most common abnormalities were, multiple ground-glass opacities, infiltration abnormalities, and parenchymal consolidation. COVID-19 patients who made autopsy showed bilateral diffuse alveolar damage associated with pulmonary edema, pro-inflammatory concentrates, and indications of early-phase ARDS. [9] Clinical examination of severe cases of COVID-19 revealed a decreased ratio of arterial oxygen partial pressure to fractional inspired oxygen (PaO₂:FiO₂ ratio) with concomitant hypoxia and tachypnea. [10] Low carbon dioxide (CO₂) levels in COVID-19 patients was found. [11] Respiratory failure due to ARDS is one of the major causes of mortality associated with COVID-19 disease. [12] One from 10 patients require ICU care with ventilatory support. [12,13] Studies reported that acute myocardial injury and acute renal injury could occur in severe patients. The reported incidence of ARDS was higher than that of other organ injuries. The most common respiratory symptom of COVID-19 is dry cough. [11,12,14,15].

A study on COVID-19 cases documented by the Chinese Center for Disease Control and Prevention demonstrated a case fatality rate of 10.5. [16] Elevated serum troponin levels have been described in many patients infected with COVID-19. [17] Cardiac arrhythmia was noted in Chinese patients. [11] COVID-19 infected patients are likely at increased risk of venous thromboembolism. [18] Other studies suggest significant coagulation pathway abnormalities in patients with COVID-19, including elevated D-dimer [12,15, 19]. The aim of this study is to compare between the prevalence of COVID-19 either in Saudi Arabia Egypt and complications on the cardiovascular and respiratory systems.

SUBJECTS AND METHODS

The Study conducted through cross-sectional study design. It will be carried out among COVID-19 patients in Saudi Arabia and Egypt among 2 months (May 2020 to June 2020). The study excluded fatal cases, patients with a psychiatric illness or mental impairment, or patients unable to give informed consent. All participants were provided with clear and easy to understand information about the research paper in order to allow them to make an informed and voluntary decision about their participation. The study was ethically approved from ethical committee in Ha'il University, KSA. The data collection tool through a well-structured questionnaire on google drive in KSA, while done through interview with patients or their relatives in Egypt. The questionnaire or the interview was consisted of 27 questions, 8 about socio-demographic of patients, 11 about complications on the cardiovascular system, 8 about complications on the respiratory system. Statistical analyses were performed using SPSS version 23 (SPSS, Chicago, IL, USA). Frequencies and percentages were calculated for categorical variables.

RESULTS AND DISCUSSION

Two hundred and fifty-six from KSA and 120 patients from Egypt who infected with COVID-19 were participating in this study. Table 1 showed the age of infection between Saudi and Egyptian people, the highest percentage was found among 31-40 years old (26.2% Vs 45%) respectively, followed by 41-50 years old (19.5% Vs 25%) respectively (Figure 1). About 45% were smokers. Study by Huang reported first clinical features of COVID-19 patients on January 2020, half of them were aged 25–49 years, and 34% (50–64 years). [12] Another study showed in Asian ethnicity; COVID-19 affects males (58%), this might be due to increased expression of hACE-2 receptor due to higher rates of smoking. [20] Another report by Chinese Centre for Disease Control and Prevention, showed that <1% of the cases were children with age <10 years old. The mortality is <1% in <50 years-old and increased to 15% in those >80 years. [16]

In this research, most of cases were in-contact with patients infected with COVID 19 (75.8% Vs 45%) in Saudi and Egyptian respectively (Figure 2). Most of cases had persons infected with COVID-19 in their families or relatives (78.1% Vs 70%) in Saudi and Egyptian respectively. Half of Saudi cases who participated in the research had persons in their family works in health field, while in Egypt (40%). Most of Saudi patients (72.2%) were isolated in hospitals, while in Egyptian patients 87.5% were isolated in their homes.

In the current study, symptoms for patient slightly differ from Egypt and KSA, as we found that in KSA, Smell & taste Loss (89%), dizziness&fatigue (74.6%), Fever (70%), headache (62.9%), cough (40.2%), muscle pain (37.5%), diarrhea (34.7%) of them had Sore throat (31.5%), rhinitis (27.7%), vomiting (23%). While in Egypt 100% of Egyptian patients suffering from most of symptoms. Most studies on hospitalized patients from Wuhan reveal that the common symptoms of COVID-19 are fever (98%),

fatigue (70%), dry cough (59%), anorexia (40%), myalgia (35%), dyspnea (31%) and sputum production (27%). COVID-19 disease started with high temperature, myalgia, dry cough, fatigue and increased symptoms to dyspnea and ARDS over six and eight days after infection with COVID-19. [21] Other study showed that patients suffered from mild disease (no or mild pneumonia) in around 80% and recovered within two weeks. On the other hand, severe disease (dyspnea, hypoxia or >50% lung involvement within 1-2 days) in 14% and recovered in a period of three to six weeks, while critical disease such as ARDS, sepsis, septic shock or was found in 5% of confirmed cases of COVID-19. [16] Study of Sharma *et al.* reported that low grade of axillary temperature (>37.5 °C) in COVID-19 and it was intermittent and prolonged duration about two weeks. [21] Other study by Guan *et al.* on COVID-19 patients showed fever on admission (about 44%) and during hospitalization (about 89%). Five percent suffering from nausea and vomiting and 3.8% with diarrhea. [22].

Table 1: Frequencies and percentages of COVID-19 patients in Saudi Arabia and Egypt who answering the following questions about symptoms, isolation and supplements. [n= 256 (KSA) +120 (Egypt)]

Questions	Answers																
Patient age during infection with COVID-19?	Answer	0-10 Years		11-20 Years		21-30 Years		31-40 Years		41-50 Years		51-60 Years		>60 Year			
	KSA	7.4%		12.1%		17.2%		26.2%		19.5%		7.4%		10.2%			
	Egypt	5%		25%		0%		45%		25%		0%		0%			
Do you have a person in your family works in health field?	Answer	YES				NO				I Don't Know							
	KSA	127 (49.6%)				128 (50%)				1 (0.4%)							
	Egypt	48 (40%)				72 (60%)				0 (0%)							
Do you in-contact with patients with COVID-19?	Answer	YES				NO				I Don't Know							
	KSA	194 (75.8%)				21 (8.2%)				41 (16%)							
	Egypt	54 (45%)				18 (15%)				48 (40%)							
Do you have any person infected with COVID-19 in your family or relatives?	Answer	YES				NO				I Don't Know							
	KSA	200 (78.1%)				53 (20.7%)				3 (1.2%)							
	Egypt	84 (70%)				36 (30%)				0 (0%)							
Have you been isolated in hospital or homes during the infection period with COVID-19?	Answer	YES (in Hospitals)							YES (in Homes)								
	KSA	195 (76.2%)							61 (23.8%)								
	Egypt	15 (12.5%)							105 (87.5%)								
Are you smoker?	Answer	YES							NO								
	KSA	108 (42.4%)							147 (57.6%)								
	Egypt	54 (45%)							66 (55%)								
What is the chronic disease do you have?	Answer	Obesity		Hypertension		Diabetes Mellitus		High cholesterol		Respiratory Diseases		Heart diseases		Kidney Failure		None	
	KSA	25%		24.6%		25.4%		16%		20.3%		23.4%		7.4%		30.9%	
	Egypt	40%		0%		20%		55%		35%		0%		0%		25%	
What kind of dietary supplement did you use during your infection with (COVID-19)?	Answer	Vit. C		Vit. D		Selenium		Omega 3		Multivitamins			Do not use any thing				
	KSA	17.2%		14.8%		8.2%		9%		32.8%			47.3%				
	Egypt	100%		100%		0%		100%		100%			0				
Have you had any of these respiratory symptoms during the period of infection with (COVID-19)?	Answer	Sore throat	Cough	Fever	Headache	Smell & taste Loss	Rhinitis	Muscle pain	Diarrhea	Vomiting	Urticaria	appetite Loss	Dizziness & Fatigue				
	KSA	31.5 %	40.2%	70.7 %	62.9%	89%	27.7%	37.5%	34.7%	23%	18%	23%	74.6%				
	Egypt	100%	100%	100%	100%	100%	100%	100%	60%	0%	35%	15%	100%				

Table 2 showed the cardiovascular problems in patients infected with COVID-19 either in Egypt or KSA. Around 40% of Saudi and Egyptian patients who infected with COVI-19 had tachycardia, while (60% Vs 33.6%) of Egyptians & KSA, respectively did not have tachycardia. Another study on about one thousand and half patients with COVID-19 showed that the prevalence of hypertension and cardiac disease was about 17% and that these patients were more likely to require critical care. [14] Another study of about 44 thousand patients with COVID-19 showed that patients with history of cardiovascular diseases increase the mortality rate by about five-fold when compared with patients without cardiovascular

disease (CVD) (10.5% vs. 2.3%). [16] Other studies found an increased risk of mortality in patients with prior CVD. [11,22,23,24,25]. The crude mortality rate was 2.3 % and for age >80, the case fatality rate was 14.8%. [22]

Table 2: Frequencies and percentages of COVID-19 patients in Saudi Arabia and Egypt who answering the following questions about cardiovascular problems. [n= 256 (KSA) +120 (Egypt)]

Questions	Answers										
	Did you feel tachycardia during infection with (COVID-19)?	Answer	YES			NO			Sometimes		
KSA		112	43.8%		86	33.6%		58	22.7%		
Egypt		48	40%		72	60%		0	0%		
Did you feel bradycardia during of infection with (COVID-19)?	Answer	YES			NO			Sometimes			
	KSA	14	5.6%		209	81.6%		33	12.9%		
	Egypt	0	0%		120	100%		0	0%		
What is the heart rate during infection with (COVID-19)?	Answer	<60/min	60-100/min		101-125/min	126-150/min	151-175/min		>175/min	I don't know	
	KSA	4.7%	22.7%		23.8%	19.5%	8.6%		10.9%	9.8%	
	Egypt	0%	0%		30%	5%	0%		0%	65%	
Did you examine your heart enzymes during infection with (COVID-19)?	Answer	YES			NO			Don't know			
	KSA	198	77.3%		36	14.1%		22	8.6%		
	Egypt	24	20%		96	80%		0	0%		
What is your heart enzymes level during infection with (COVID-19)?	Answer	Low		Normal		High		I Don't know			
	KSA	0	0%	115	44.9%	80	31.3%	61	23.8%		
	Egypt	0	0%	24	20%	6	5%	90	75%		
What are the cardiovascular complications you suffered during infection with (COVID-19)?	Answer	Coronary heart disease	Myocardial Infarction	Myocarditis	Heart rhythm Disorder	Atrial fibrillation	Blood clot	Heart Failure	Cardiac Arrest	I Don't know	
	KSA	5.1%	3.5%	7.4%	42.2%	6.6%	5.1%	3.9%	7%	44.1%	
	Egypt	0%	0%	0%	0%	0%	0%	0%	0%	100%	

In our study, coronary heart disease (CHD) was found to be about 5% in Saudi patients infected with COVID-19. Study of Guan et al. stated that history of CHD was found in about 4% of all cases, increased in fatal cases (about 22%). Case fatality rates were varied, in CHD (about 10%), in diabetes (about 7%), in hypertension (6%). [22] In a study by Shi et. al. showed that cardiac injury was about 20%, but in patients who died, about 10% had CAD, 4% had heart failure, and 5% had cerebrovascular disease. [26]

In this study, about (30% Vs 23.8%) of patients of Egyptians & KSA, respectively have slightly increased heart rate (101-125 beat/min), followed by (5% Vs 19.5%) of patients of Egyptians & KSA, respectively with high heart rate (126-150 beat/min). Heart rhythm disorder was the most complication that found during infection with COVID-19 in Saudi patients (42.2%) followed by Myocardia (7.4%) and atrial fibrillation (6.6%). One study of COVID-19 patients in Hubei, China, reported about 7% incidence of heart palpitations. [27] Also, cardiac arrhythmia was noted in about 17% of Chinese patients in and was more common in ICU patients than in non-ICU patients (44% vs. 7%). [11] Dysrhythmias may occur due to hypoxia, inflammatory stress, and abnormal metabolism. [12] If dysrhythmias are associated with an elevation in serum troponin, the clinician should consider myocardial injury, acute myocarditis. [28]

In the current research, the heart enzymes (20% Vs 44.9%) of patients of Egyptians & KSA, respectively with normal heart enzymes, while (5% Vs 31.3%) of patients of Egyptians & KSA, respectively have high heart enzymes (Figure 4). Studies of Ruan et al. & Yang et al. reported that elevated level of serum troponin was found in many patients with COVID-19. [17,25] Other research revealed that cardiac troponin I levels were significantly higher in patients with severe COVID-19 versus non-severe cases (25.6 Vs 6.8). [29]. Other studies showed that myocardial injury with an increased level of troponin I may occur in 7-17% of patients hospitalized with COVID-19 and 22-31% of those admitted to the ICU. [11,12] In our study, cardiac arrest and heart failure were found in Saudi cases (7% and 3.9%) respectively. One study reported that acute heart failure was found in 23% of patients and cardiomyopathy in 33% of patients [30], nearly half did not have any history of hypertension or CVD. [31]

In this research, blood coagulation was found in 5.1% of KSA patients. Other research showed high percentage than in KSA patients, they found about 30% in critically ill patients with COVID-19. [14,18,33] Other studies suggest significant coagulation in COVID-19 patients with elevated D-dimer.

[12,15,19,34]. Other reports found that abnormal coagulation parameters in hospitalized patients with severe COVID-19 disease. [19]

Table 3 showed the respiratory problems in patients infected with COVID-19 either in Egypt or KSA. In KSA, the most common complications found were difficulty in breathing (75.4%), pain during breathing (61.3%), increased breathing (55.9%), wheezing (37.1%), Blueness in skin, lips & nails (21.1%), presence of Phlegm (16.4%), Loss of conscious (16.8%), and finally Parkinson (12.9%). While in Egypt, the most common complications found were presence of Phlegm (100%), followed by pain during breathing (80%), increased breathing (60%), difficulty in breathing (50%), wheezing (10%), while the Blueness in skin, lips & nails or loss of conscious or parkinson not present (Figure 3). Another study showed that most of patients had bilateral lung ground glass opacity on computed tomography imaging. The initial symptoms included fever (98%), cough (76%), dyspnea (55%), myalgia or fatigue (44%), sputum production (28%), headache (8%), hemoptysis (5%), and diarrhea (3%), ARDS (29%), acute cardiac injury (12%), acute kidney injury (7%), and shock (7%). [12,14] other studies showed that fever (99%), fatigue (70%), and dry cough (59%), diarrhea and nausea (10%). [23, 24] In China, nearly 5% of critically ill patients with COVID-19 have respiratory failure, development of ARDS, and ICU admission. [16] Other studies showed prevalence of ARDS caused by COVID-19 is about 8%. [6,14]

In this study, the respiratory rate was from 12-20/min in (30.1% Vs 35%) and > 20/min in (52.7%Vs 20%) in Saudi and Egyptian patients respectively. The percentage of oxygen in the blood during the period of infection with (COVID-19) was >95% in (47.7% Vs 50%) and from 94-85% in (24.2%Vs 15%), and from <85% in (16.8%Vs 10%) in Saudi and Egyptian patients respectively (Figure 5). Other study done by Wang and his colleagues revealed a decreased ratio of arterial oxygen partial pressure to fractional inspired oxygen (PaO₂:FiO₂ ratio) with concomitant hypoxia and tachypnea in severe cases of COVID-19. [10] Other study by the Chinese Center for Disease Control and Prevention showed about 81% of COVID-19 patients exhibited mild illness and about 14% had severe symptoms.[35]

Our study showed the percentage of carbon dioxide in the blood during the period of infection with (COVID-19) was <35mm Hg in (4.2% Vs 0%) and from 35-45 mmHg in (45.7%Vs 50%), and from >45mm Hg in (34%Vs 35%) in Saudi and Egyptian patients respectively (Figure 6). Another study in Wahan described low CO₂ levels in COVID-19 as the median partial pressure of CO₂ level was 34 mmHg. [11]

In our study, only (31.6% Vs 20%) in Saudi and Egyptian patients respectively were put on ventilator during infection period with COVID-19 In KSA, COVID-19 patients were suffering from different complications such as bronchitis (25.8%), ARDS (20.3%), pneumonia (10.2%), bronchiolitis (7%). While in Egyptian COVID-19 patients were suffering from pneumonia (30%), bronchitis (20%), bronchiolitis (10%), without ARDS and emphysema. Around 10 % of the patients require intensive care unit (ICU) care with ventilatory support and an ICU mortality rate of 79% has been reported [12,13]. Other study showed that COVID-19 was of clustering onset and mainly affected the respiratory system with some patients rapidly progressing to ARDS. [30,32].

In the current research, COVID-19 patients in KSA were used some drugs during infection such as analgesics (91.4%), supplements/ vitamins (79.3%), antipyretics (74.6%), hydroxychloroquine/ azithromycin (64.1%), IV Fluids (39.8%), mechanical support for heart and lungs (30.1%). While in Egyptian patients who infected with COVID-19 100% of them used the previous things except IV fluids and mechanical support for heart and lungs. Other studies showed the comparison between treatment guidelines for COVID-19 in KSA, USA (Massachusetts), Europe (Ireland) and Egypt. They found that, in mild to moderate cases, they gave hydroxychloroquine or chloroquine or chloroquine phosphate in KSA, but clinical trial of remdesivir (USA), while they gave chloroquine (oral) or hydroxychloroquine (oral) in Europe, but in Egypt they used oseltamivir & chloroquine phosphate. In severe cases, they gave hydroxychloroquine or chloroquine or chloroquine phosphate or combination therapy (lopinavir/ritonavir) in KSA, while in USA they used hydroxychloroquine or chloroquine or combination therapy (lopinavir/ritonavir) or (darunavir/ cobicistat) in USA, but in Europe, they used combination therapy (oral lopinavir/ritonavir) or intravenous remdesivir, also in Egypt they used oseltamivir or hydroxychloroquine or chloroquine phosphate combination therapy (lopinavir/ritonavir), serum ferritin, D-dimer. But in critical cases they gave combination therapy (lopinavir/ritonavir) or hydroxychloroquine or remdesivir (KSA), interferon-B1(Betaseron) (USA), while in Egypt, they used antibiotic, oseltamivir or hydroxychloroquine (or chloroquine phosphate), Azithromycin /Hydrocortisone therapeutic anticoagulant if D-dimer invasive (Egypt). [36]. Chloroquine analogues, chloroquine phosphate and hydroxychloroquine, have been employed for the prevention and treatment of malaria since the early 1900s. [37] Also, chloroquine analogues used in treatment of autoimmune diseases such as systemic lupus erythematosus and rheumatoid arthritis. Chloroquine analogues has many properties with minimal toxicity profile that preferred to be used in reduction of the inflammatory response caused by virus. [38]

It inhibits viral replication through interference with endosome-mediated viral entry. so, it used in the treatment of COVID-19 and also appears to interfere with the terminal glycosylation of ACE2 receptor expression which prevents SARS-CoV-2 receptor binding. [39] Study of Hoenen *et al.* reported that Remdesivir (GS-5734) is an antiviral agent undergoing phase 3 clinical trials for the treatment of COVID-19. It was initially developed for treatment of Ebola hemorrhagic fever with trials still ongoing.[40]. Cvetkovic & Goa stated that Lopinavir (LPV) is an aspartic acid protease inhibitor developed for the treatment of HIV. Lopinavir is co-formulated with ritonavir (LPV/r) to provides potent and sustained viral load reductions for patients with HIV. The primary antiviral effect of protease inhibitors is prevention of viral replication. [41] Another study by wang *et.*, 2020c revealed that Remdesivir and chloroquine effectively inhibit the recently emerged novel coronavirus (2019-nCoV) in vitro.[42]Chloroquine phosphate has shown apparent efficacy in treatment of COVID-19 associated pneumonia.[43,44] Other study showed the efficacy and safety of hydroxychloroquine for treatment of pneumonia caused by 2019-nCoV (HC-nCoV).[45]

Table 3: Frequencies and percentages of COVID-19 patients in Saudi Arabia and Egypt who answering the following questions about respiratory system problems. [n= 256 (KSA) +120 (Egypt)]

Questions	Answers									
Did you have any of these respiratory symptoms during infection with (COVID-19)?	Answer	Difficulty In breathing	Pain during breathing	Increase breathing rate	Wheezing	Loss of consciousness	Parkinson	Blueness in skin, lips, nails	Phlegm	NO
	KSA	75.4%	61.3%	55.9%	37.1%	16.8%	12.9%	21.1%	16.4%	16%
	Egypt	50%	80%	60%	10%	0%	0%	0%	100%	0%
What is your respiratory rate during the infection with (COVID-19)?	Answer	<12/min		12-20/min		>20/min		I Don't know		
	KSA	18	7%	77	30.1%	135	52.7%	26	10.2%	
	Egypt	0	0%	42	35%	24	20%	0	0%	
What is the level of blood oxygen during Infection with (COVID-19)?	Answer	>95%		94-85%		<85%		I Don't know		
	KSA	122	47.7%	62	24.2%	43	16.8%	29	11.3%	
	Egypt	60	50%	18	15%	12	10%	30	25%	
What is the level of blood CO2 during infection with (COVID-19)?	Answer	<35mm Hg		35- 45 mm Hg		>45 mm Hg		I Don't know		
	KSA	11	4.2%	117	45.7%	87	34%	41	16%	
	Egypt	0	0%	60	50%	42	35%	18	15%	
Did you need ventilator during infection with (COVID-19)?	Answer	YES				NO				
	KSA	81	31.6%	175	68.4%					
	Egypt	24	20%	96	80%					
What are the respiratory complications you suffered during infection with (COVID-19)?	Answer	Bronchitis	Acute respiratory distress syndrome	Pneumonia	Bronchiolitis	Emphysema	NO			
	KSA	25.8%	20.3%	10.2%	7%	2%	45.7%			
	Egypt	20%	0%	30%	10%	0%	40%			
Did you oxygen sessions during infection with (COVID-19)?	Answer	YES			NO			I Don't know		
	KSA	164	64.1%	91	35.5%	1	0.4%			
	Egypt	24	20%	96	80%	0	0%			
What kind of treatment did you use during your infection with (COVID-19)?	Answer	Analgesics	Supplements/ Vitamins	Antipyretics	Hydroxychloroquine/ Azithromycin	IV Fluids	Mechanical Support for heart and lungs	I Don't know		
	KSA	91.4%	79.3%	74.6%	64.1%	39.8%	30.1%	3.5%		
	Egypt	100%	100%	100%	100%	0%	0%	0%		

Figure 1: (Patients answer in %) about question (Patient age during infection with COVID-19)?

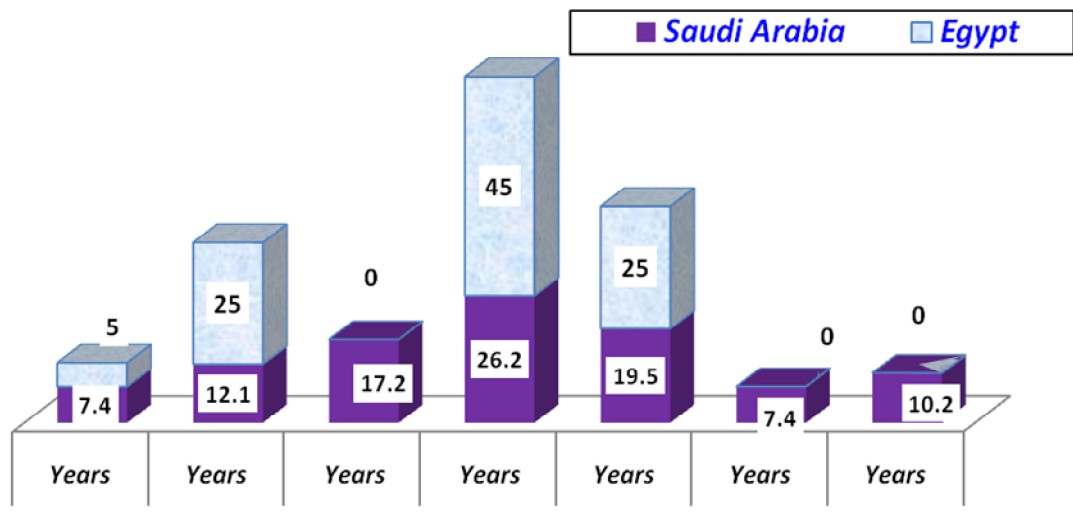


Figure 2: (Patients answer in %) about question (Do you in-contact with patients with COVID-19)?

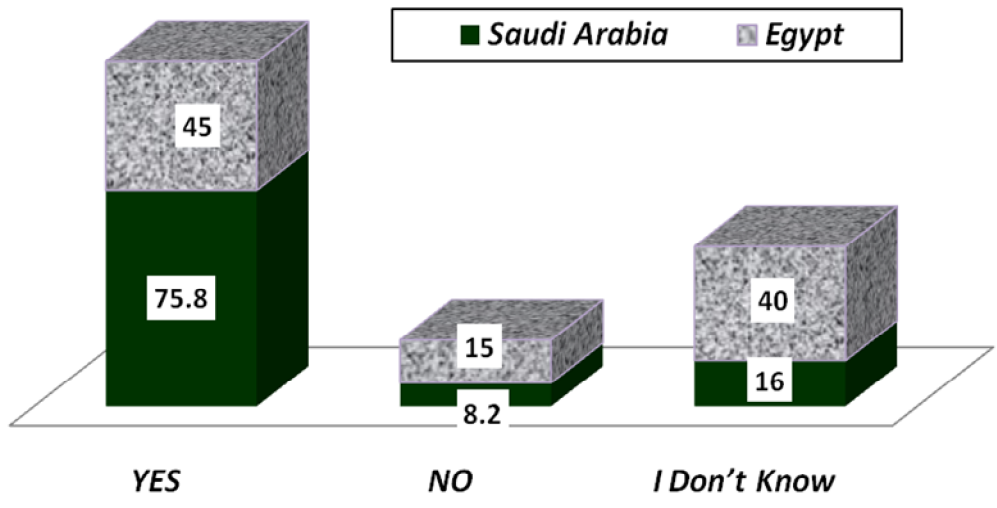


Figure 3: (Patients answer in %) about question (Do you have any of respiratory symptoms during the period of infection with (COVID-19)?

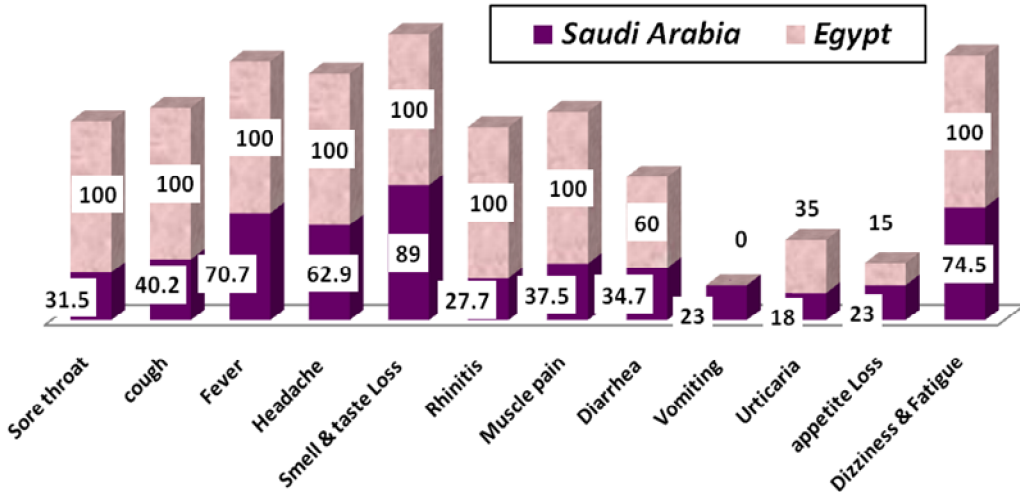
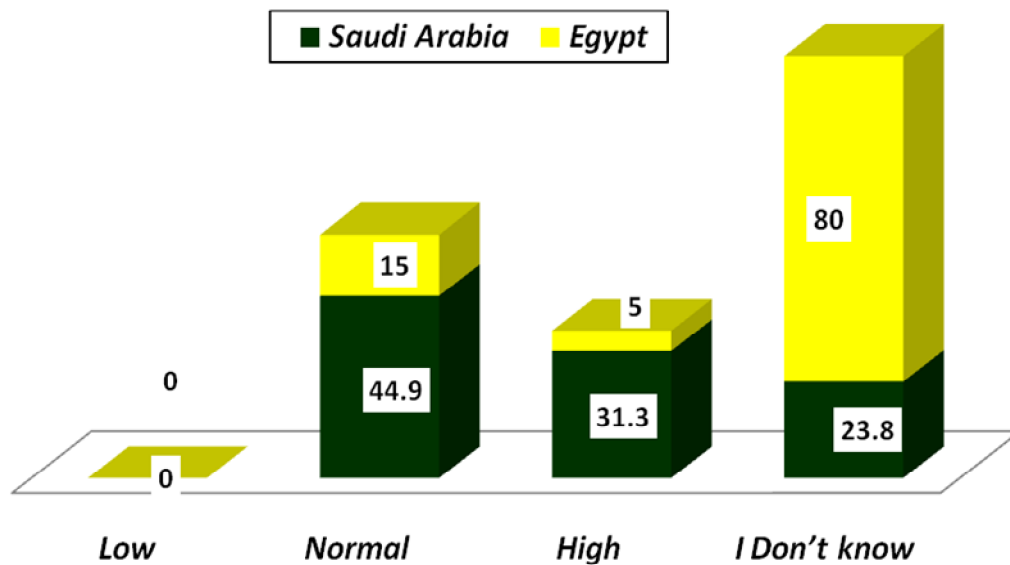
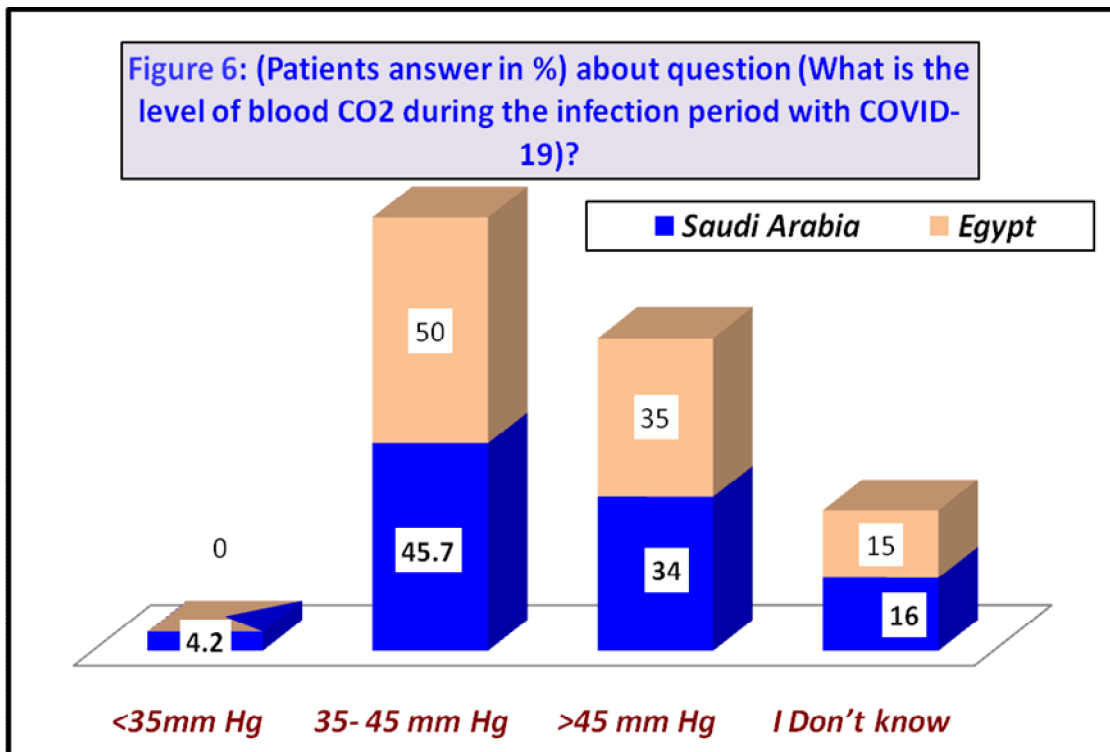
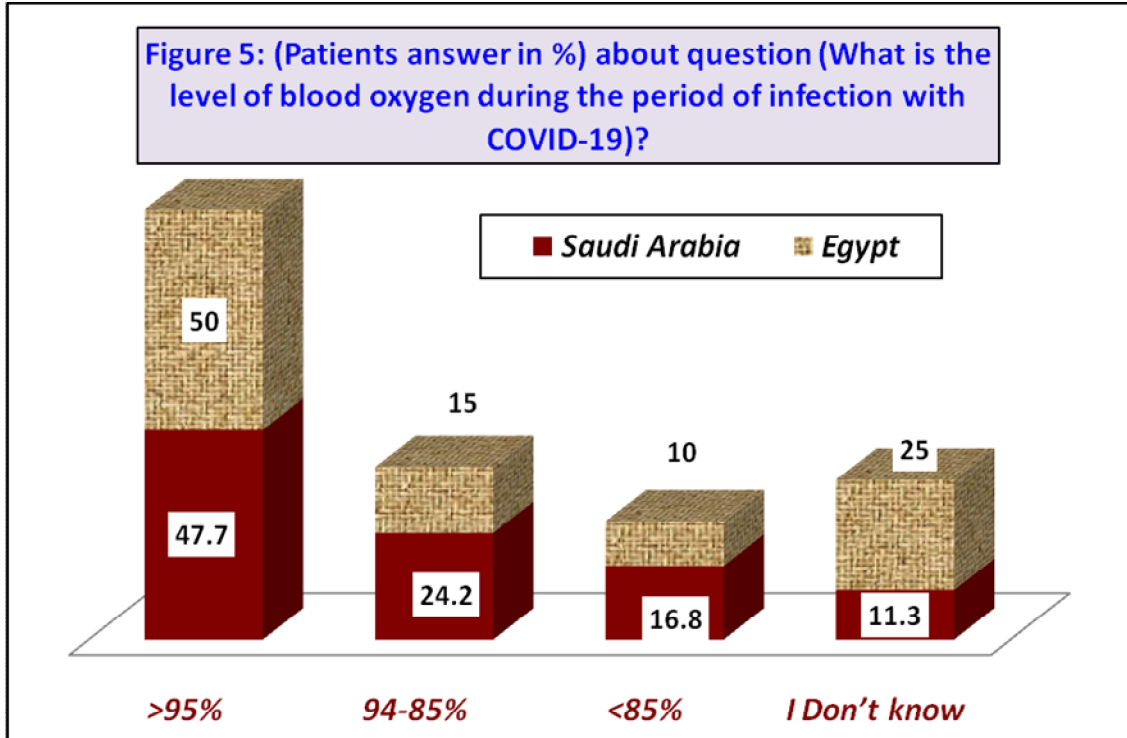


Figure 4: (Patients answer in %) about question (What is the level of heart enzymes during the period of infection with COVID-19)?





CONCLUSION

From our results we can conclude that the most infected people with Covid-19 their ages ranged from 30-50 years old, and most of them were in contact with patients infected with COVID-19. About half of patients worked in health field. About half of patients with >95% oxygen level either in Saudi and

Egyptian patients, while 16.8% (Saudi) and 10% (Egyptian) patients with <85% oxygen who are infected with COVID-19. Cardiovascular and respiratory complications were more common with patients either in KSA or in Egypt but with less virulence compared to which happen on March and February 2020.

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